Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A method for creating semiconductor devices, comprising:

providing a photoresist layer on a wafer;

patterning the photoresist layer;

chemically cross-linking polymers in the patterned photoresist layer by exposure to at least one reactive chemical; and

transferring the pattern in the photoresist layer.

2. (Previously Presented) The method, as recited in claim 1, wherein the at least one reactive chemical is a reactive gas.

3. (Previously Presented) The method, as recited in claim 1, wherein the patterning the photoresist layer comprises exposing regions of the photoresist layer with a light that has a wavelength that is less than 248 nm and removing regions of the photoresist layer.

4. (Previously Presented) The method, as recited in claim 1, wherein the patterning the photoresist layer comprises exposing regions of the photoresist layer with a light that has a wavelength no greater than 193 nm and removing regions of the photoresist layer.

5. (Original) The method, as recited in claim 4, wherein the chemically cross-linking polymers, further comprises heating the wafer.

6. (Original) The method, as recited in claim 5, wherein transferring the pattern comprises etching the wafer.

7. (Original) The method, as recited in claim 5, wherein the transferring the pattern comprises implanting ions into the wafer.

8. (Original) The method, as recited in claim 2, wherein at least the top 10% of volume of the photoresist layer is cross-linked.

9. (Original) The method, as recited in claim 2, wherein the chemical cross-linking improves photoresist etch selectivity without shrinkage.

10. (Original) The method, as recited in claim 2, wherein the photoresist layer is a photoresist material selected from the group comprising of Poly(methyl methacrylate) derivatives and Cycloolefin Maleic Anhydride derivatives.

11. (Original) A method for creating semiconductor devices, comprising:

providing a photoresist layer on a wafer;

patterning the photoresist layer, comprising:

exposing regions of the photoresist layer with a light with a wavelength no greater than 193 nm; and

removing regions of the photoresist layer;

cross-linking polymers in the patterned photoresist layer; and

transferring the pattern in the photoresist layer to the wafer.

12. (Original) The method, as recited in claim 11, wherein the photoresist layer is a photoresist material selected from the group comprising of Poly(methyl methacrylate) derivatives and Cycloolefin Maleic Anhydride derivatives.

13. (Original) A method for creating semiconductor devices, comprising:

providing a photoresist layer on a wafer;

patterning the photoresist layer;

exposing regions of the photoresist layer with a light with a wavelength no greater than 193 nm; and

removing regions of the photoresist layer;

heating the wafer

chemically cross-linking polymers in the patterned photoresist layer by exposing the patterned photoresist layer to a reactive gas; and

etching the pattern in the photoresist layer into the wafer.

14-19. (Cancelled)

20. (Previously Presented) The method, as recited in claim 3, wherein the patterning the photoresist layer further comprises baking the photoresist film to promote a deprotection reaction.

21. (Previously Presented) The method, as recited in claim 1, wherein the reactive chemical is a reactive diamine gas.

22. (Canceled)

23. (Previously Presented) The method, as recited in claim 11, wherein the cross-linking polymers in the patterned photoresist layer, comprises exposing the patterned photoresist layer to at least one reactive chemical after regions have been removed from the photoresist layer to form the patterned photoresist layer.

24. (Previously Presented) The method, as recited in claim 22, wherein the reactive chemical is a reactive diamine gas.

25. (Previously Presented) The method, as recited in claim 11, wherein the patterning the photoresist layer further comprises baking the photoresist film to promote a deprotection reaction.

26. (Canceled)